



Europäisches Patentamt
European Patent Office
Office européen des brevets

⑪ Publication number:

0 320 255
A3

12

EUROPEAN PATENT APPLICATION

② Application number: 88311618.8

⑤ Int. Cl.⁴: G01L 1/24

② Date of filing: 08.12.88

③ Priority: 10.12.87 US 131069

⑦ Applicant: **SIMMONDS PRECISION PRODUCTS INC.**
150 White Plains Road
Tarrytown New York 10591(US)

④ Date of publication of application:
14.06.89 Bulletin 89/24

⑦ Inventor: Spillman, William B., Jr.
Rt No. 1, Box 1569 Guinea Road
Charlotte Vermont 05455(US)

④ Designated Contracting States:
DE FR GB IT NL SE

74 Representative: Foster, David Martyn et al
MATHISEN MACARA & CO. The Coach
House 6-8 Swakeleys Road
Ickenham Uxbridge UB10 8BZ(GB)

Ⓢ Date of deferred publication of the search report:
24.01.90 Bulletin 90/04

54 Polarimetric optical frequency domain distributed strain sensor and method.

57) An optical frequency domain distributed strain sensor for determining the strain distribution along an optical fibre (44) includes an optical source (32) which provides a polarization controlled optical interrogation signal having a frequency varying in a recurring linear manner. The interrogation signal is injected into the fibre embedded within a composite structure (46) which places the fibre under strain. A portion of the interrogation signal is backscattered from the sensing fibre (44) as a consequence of the strain experienced by the fibre and is mixed with a reference signal to produce beat frequency signals. The frequency of the beat signals is directly related to the position of backscatter in the sensing fibre while the amplitude of each beat frequency signal is directly related to the integrated strain-induced birefringence up to the backscatter point. An in-line fibre polarizer and an associated controllable polarizer (38,40) control the polarization state of the interrogation signal in the sensor fibre (44) to provide zero point sensitivity compensation and controllable testing for ambiguous strain points.

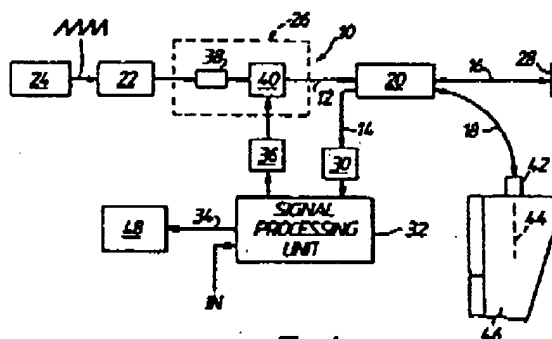


FIG. 1.

EP 0 320 255 A3

Xerox Copy Centre